74th Annual Meeting
Washington, DC
March 4-8, 2016
THE WASHINGTON CONVENTION CENTER

DISCLOSURE OF Off-Label Use

The Following Drugs are not FDA approved for the treatment of Androgenetic Alopecia:

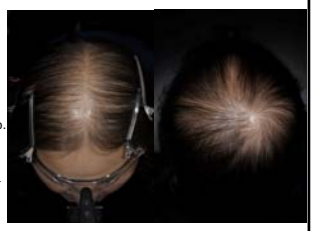
- Cyproterone Acetate,
- Spironolactone,
- Dutasteride,
- Flutamide,
- Bicalutamide,
- Oral Minoxidil
- Bimatoprost

CASE SCENARIO

56-year-old woman who has been concerned about increased hair shedding, scalp tingling/pain/burning and excessive thinning of her scalp hair over the preceding 12 months.

Examination revealed that she has a receding hairline bilaterally and noticeable hair loss over her mid frontal scalp.

Her scalp appears healthy, she is otherwise well, her thyroid function tests are normal and she passed through a trouble-free menopause five years previously. She takes no medications.



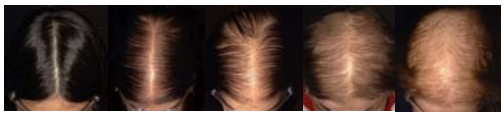
Commentary

Vera has androgenetic alopecia.

Androgenetic alopecia produces hair loss in a reproducible pattern called female pattern hair loss (FPHL).

The pattern of hair loss in women is different than that in men. Women with FPHL present with increased hair shedding or a diffuse reduction in hair volume over the mid-frontal scalp, or both.

The hair loss (density) can be graded clinically using a validated visual analogue scale



Stage 1 Stage 2 Stage 3 Stage 4 Stage 5

A really useful question:

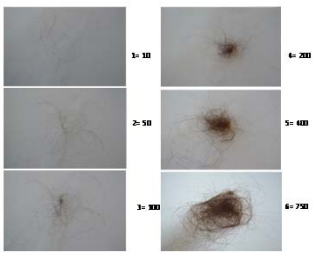
When you tie your hair back in a pony tail, how thick is your pony tail compared to 5 or 10 years ago, before you started losing hair?

Hair shedding scale

Hair loss (shedding) can also be scored on a validated visual analogue scale.

The women were asked to look at an A4 page containing the six photos of hair bundles and to point to the photograph that best correlates with the amount of hair shed on a wash day and the photo that correlated best with the amount shed on a non-wash day.

The frequency of hair washing is also recorded. The results were scored on a scale of 1–6



- 1 and 2 are regarded as normal levels of shedding.
- 3 or more denoted excessive shedding for a woman with short hair.
- 3 and even 4 may be normal for women with very long hair
- 5 and 6 are always excessive

Hair Pull Test

- The hair pull test can be used to confirm increased hair shedding.
- Shedding may be localized to the crown or generalized

The Hair pull test. Around 10 hairs are grasped firmly at the scalp between the thumb and index finger and traction is applied as the hairs are pulled along their length

Differential Diagnosis

- So-called senescent or age-related alopecia has been postulated as a distinct entity but evidence for this is lacking.
- Chronic telogen effluvium (CTE) is an important differential diagnosis in women with increased hair shedding but no visible baldness. CTE is a distinct clinical entity that does not evolve into FPHL and is due to a variance in the range of anagen duration rather than shortening of anagen, as seen in FPHL.
- CTE can be excluded in this case.

Do you have any questions?

What is this the diagnosis?
Is this common?
No-one else in the family has it! Why did I get this?
Do I need any tests?
What is happening to my hair?
Do I need to treat it? What happens if I do nothing?
What are the treatments options?
How long does the treatment take?
Will I need to be on treatment for life?
How does the treatment work?
Are there any side effects?
How much hair will I regrow?
Will the shedding stop?
What if the treatment doesn't work?
Should I have a transplant?
Will my daughter be affected? When should I send her along?
What else can I do? Vitamins? Shampoos? Volumizers? Top Piece/Wigs?

Is this common?

- FPHL is common and has a negative impact on a woman's quality of life.
- In Australia, there are estimated to be about 2,000,000 women with stage 2 and 700,000 with stage 3 severity hair loss.
- Hairdressers spend half their working week setting hair for women with stage 4 and 5 FPHL

Age	Hair Thickness						
	Stage 1	Stage 2	Stage 3	Stage 4	Stage 5	Total	1 – Stage 1
5-9	72(100%)					72	--
20 – 29	50 (88%)	5 (9%)	1 (2%)	1 (2%)		57	7 (12.3%)
30 – 39	73 (83%)	14 (16%)		1 (1%)		88	15 (17.0%)
40 – 49	91 (75%)	28 (23%)		3 (2%)		122	31 (25.4%)
50 – 59	106(72%)	29 (20%)	11 (7%)	1 (1%)		147	41 (27.9%)
60 – 69	73 (59%)	37 (30%)	11 (9%)	2 (2%)	1 (1%)	124	51 (41.1%)
70 – 79	58 (46%)	35 (28%)	24 (19%)	6 (5%)	2 (2%)	125	67 (53.6%)
>= 80	23 (43%)	15 (28%)	8 (15%)	8 (15%)		54	35 (57.4%)
Total	474(66%)	163(23%)	55(8%)	22 (3%)	3 (0.4%)	717	247 (32.2%*)

Table 4: Hair Patterns in Female Subjects * *adjusted to age*

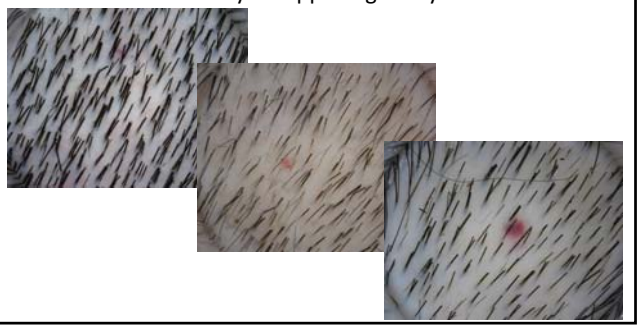
No-one else in the family has it! Why did I get this?

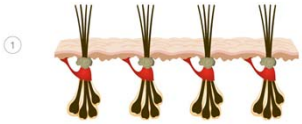
- FPHL has a complex poly genetic aetiology, being associated with several genes involved in androgen metabolism or oestrogen activity, including those for oestrogen receptor beta and aromatase.
- Epigenetic phenomenon are also likely to be involved.
- Androgen binding to hair follicle androgen receptors is important in the pathogenesis

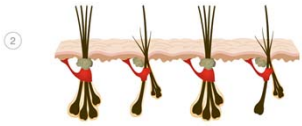
Do I need any tests?

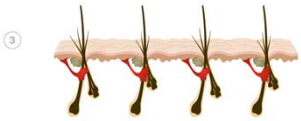
- Systemic androgen excess (virilisation or iatrogenic), thyroid disease and iron deficiency are potential aggravating factors that accelerate hair loss.
- Treatment of thyroid disease or iron deficiency alone will not regrow hair
- FPHL is associated with metabolic syndrome, NIDDM, hypercholesterolaemia and hypertension

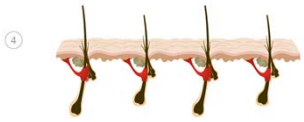
What exactly is happening to my hair?









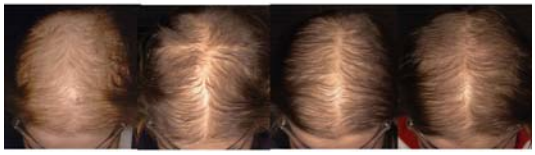


Do I need to treat it? What happens if I do nothing?

What are the treatments options?

- Treatment of FPHL involves use of oral antiandrogens such as spironolactone or cyproterone acetate to arrest progression of hair loss, and use of topical minoxidil 2% or 5% solution to stimulate hair regrowth.
- For patients intolerant of or unresponsive to these agents finasteride, dutasteride, flutamide or bicalutamide are alternatives
- None of these agents are FDA approved for the treatment of hair loss
- Flutamide and Bicalutamide require careful monitoring of liver function.

How long does the treatment take?
Will I need to be on treatment for life?



Baseline 6 months 12 months 24 months

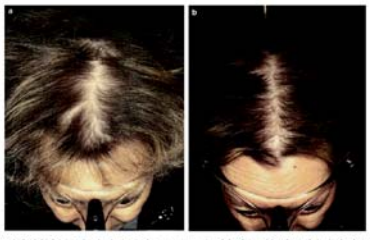
Cyproterone acetate 100mg for 10 days per month

How much hair will I regrow?

Baseline 6 months 12 months 24 months

Spironolactone 200mg per day

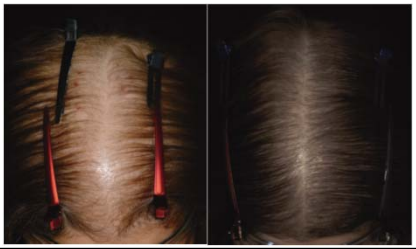
Finasteride for female androgenetic alopecia



What if the treatment doesn't work?

Flutamide 250 mg daily in non-responder to spironolactone

Before | After 12 months



What if the treatment still doesn't work?

Flutamide 50 mg daily and Oral Minoxidil

Before | After 6 months

What else can I do?

Bimatoprost

Week 0

Week 8

Week 16

What shampoo should I use?

PRP?

- How often?
- How long for?

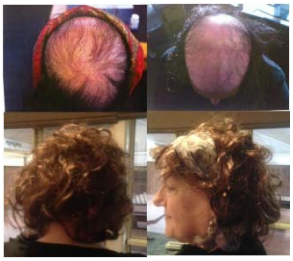
Laser Hair Comb?

- What waveband?
- What dose?
- How long for?
- How Frequently?

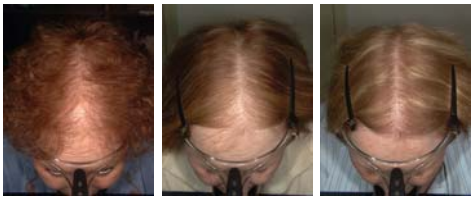
Camouflage

Top Piece

Wig



Should I have a transplant?



Pre transplant

4 weeks
Post transplant
1600 grafts

6 months
Post transplant

So what did I prescribe this woman?

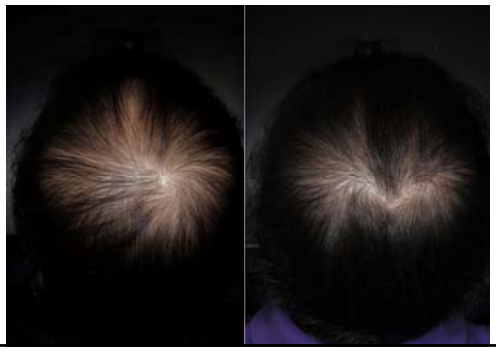
Spironolactone 25 mg, Minoxidil 0.25 mg capsule,
Once daily and review at 3 and 6 months

Baseline

6 months

Baseline

6 months



Oral Minoxidil for FPHL

Minoxidil is a FDA approved oral anti- hypertensive medication used in doses up to 100mg daily.

Minoxidil stimulates hair growth, but its use in female pattern hair loss (FPHL) is limited by potential adverse events including postural hypotension, fluid retention and hypertrichosis.

Patient 2

Oral Minoxidil for FPHL

Spironolactone is another FDA approved oral antihypertensive with antiandrogen activity. Spironolactone may arrest hair loss in FPHL and produce some hair regrowth in women with FPHL.

Patient 3

Oral Minoxidil for FPHL

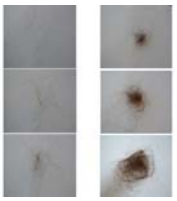
To investigate the use of oral minoxidil and spironolactone in FPHL, 100 women with a Stage 2-5 FPHL were enrolled in a pilot study and followed for 12 months.

Validated 5 point hair loss visual analogue scale

Oral Minoxidil for FPHL

Hair shedding was scored using a 6 point visual analogue scale.

Hair density was scored using a 5 point visual analogue scale.



6 point hair shedding visual analogue scale

Oral Minoxidil for FPHL

- Mean age was 48.44 years (range 18-80). Mean hair loss severity at baseline was Sinclair 2.79 (range 2-5).
- Mean hair shedding score at baseline was 4.82.
- Mean duration of diagnosis was 6.5 years (range 0.5 -30).
- Mean change in blood pressure was -4.52mmHg systolic and -6.48mmHg diastolic.
- Side effects were seen in 8 of women but were generally mild. Six continued treatment while 2 women who developed urticarial discontinued treatment.

Patient 4

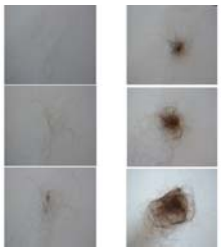
Oral Minoxidil for FPHL

Mean reduction in hair loss severity score was 0.85 at 6 months and 1.3 at 12 months.

5 point hair loss visual analogue scale

Oral Minoxidil for FPHL

Mean reduction in hair shedding score was 2.3 at 6 months and 2.6 at 12 months.



6 point hair shedding visual analogue scale

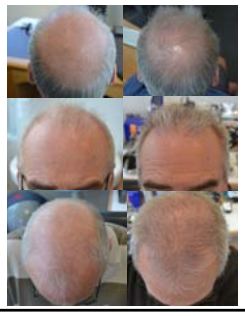
Oral Minoxidil for FPHL

In this prospective uncontrolled open label observational pilot study, once daily minoxidil 0.25mg and spironolactone 25 mg appears to be safe and effective in the treatment of FPHL.

Ethics approval obtained to initiate phase IIb, multicentre, placebo controlled, dose ranging study with an active comparator to investigate this further in women.

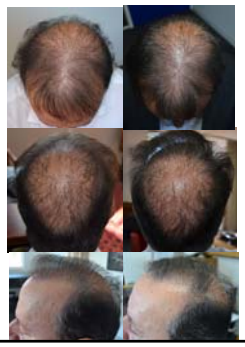
Oral Minoxidil for MPHL

Ethics approval has also been obtained to initiate phase IIb, multicentre, placebo controlled, dose ranging study with an active comparator in men.



What about men who have had transplants?

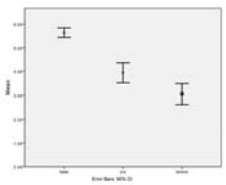
Also found to be useful in men who have previously had a transplant



Oral Minoxidil Monotherapy for CTE & Trichodynia

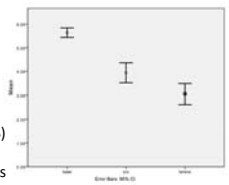
36 women

- 6 month history of increased telogen hair shedding
- no visible mid frontal scalp hair loss (Stage 1)
- no hair follicle miniaturization on scalp biopsy
- 6 months treatment with minoxidil in doses between 0.25 mg and 2.5 mg daily



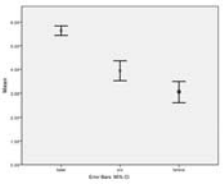
Oral Minoxidil for CTE and Trichodynia

- Hair shedding scores at baseline, 6 and 12 months were analysed using the Wilcoxon rank sum test for pair-wise comparisons.
- Mean age was 46.9 years (range 20-83).
- Mean hair shedding score (HSS) at baseline was 5.64.
- Mean duration of diagnosis was 6.55 years (range 1-27).

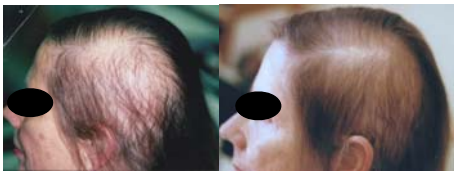


Oral Minoxidil for CTE and Trichodynia

- Reduction in mean HSS scores was 1.7 ($p<0.001$) at 6 months and 2.58 ($p<0.001$) at 12 months
- Five women described trichodynia at baseline, all noted improvement or resolution within 3 months.
- Two patients developed transient postural dizziness that resolved with continued treatment. One patient developed ankle oedema. Thirteen women developed facial hypertrichosis. For 6 women this was mild and did not required treatment.



Oral Minoxidil for Parietal Hair Loss

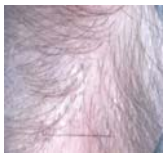


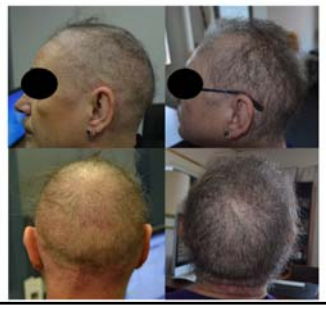
Oral Minoxidil for Bi-temporal Recession

Week 0 Week 24 Week 0 Week 24

Oral Minoxidil for Miscellaneous Hair Loss

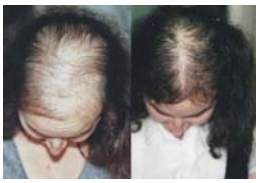
- Monilethrix
- Chemotherapy induced hair loss
- Alopecia areata
- Cicatricial alopecia
- Frontal fibrosing alopecia





Oral Minoxidil

- Over a 10 year period 3725 distinct patients with hair loss were treated with oral minoxidil in doses ranging from 0.1mg daily to 20 mg daily .
- There were 989 men and 2736 women.
- Patients were generally commenced on a low dose and reviewed at 3 monthly intervals. When necessary, doses were escalated.
- In the men, minoxidil was used either alone as monotherapy (62) or together with finasteride (912) or dutasteride (15).



Oral Minoxidil and Pericardial Effusion

- In women, minoxidil was used either alone as monotherapy (805) or together with spironolactone (1228), cyproterone acetate (630) flutamide (11), bicalutamide (5) or spironolactone /flutamide (57).
- There were no cases of syncope, tachycardia or pericardial effusion identified. No ECG abnormalities